Common Lesions of the Urethra in Women

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SUMMARY

Urethral disease in women and girls often is overlooked. As the urine may seem to be normal as determined by repeated urinalysis, the symptoms—urinary frequency and burning—may be attributed entirely to other pelvic disease or to functional disorder. Since erroneous diagnosis may lead to unnecessary procedures or to neglect of treatment with consequent development of severe disease in the kidneys or ureters, it is important to consider urethral lesions as a possible cause in any case of abdominal discomfort in women.

The most common lesions of the urethra in women are urethritis, stricture, caruncle, inflammatory polyps and cysts, prolapse of the urethra, and diverticulum. In some cases diagnosis can be made simply on the basis of inspection and palpation. In others more extensive diagnostic procedures must be carried out in order that treatment may be definitive.

The methods of treatment, varying with the nature of the lesion, are outlined herein.

AN often overlooked cause of urinary frequency and urgency in women, with burning and pain when urine is discharged, is urethral disease of one kind or another.

In a study of 1,000 women with frequency of urination, Bugbee[2] noted that lesions of the urethra were partially or wholly responsible in 690 instances. Stevens,[11] in a report on 650 consecutive cases of urinary disturbances in women, said that in 123 cases the symptoms were caused entirely by disease of the urethra, and in 501 cases partly by lesions there.

In some cases of urethral disease there is referral of pain to the groin, to the lower abdomen, to the lumbar or sacral regions, to the rectum, or to the thighs. Misinterpretation of pelvic myalgia in such circumstances may lead to unnecessary operations or to diagnosis of psychoneurosis and to neglect of a distressing and potentially dangerous disease. It is particularly noteworthy that diagnostic attention may be misdirected because in urethral disease there may be no abnormality in the urine as determined by simple urinalysis.

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Lesions of the urethra should always be considered a possible source of abdominal discomfort in women. Recognition of them is important not only because of the distress they cause in themselves and the erroneous diagnoses and needless procedures that may result if they are overlooked, but also because of the back-pressure effects upon the upper urinary tract. Urethritis in young girls[10] particularly has never been given the emphasis merited by the incidence and importance of the disease. Too often in girls pyelitis is erroneously diagnosed and chronic urethritis overlooked or improperly evaluated until more serious disease results from it.

The most common urethral diseases in women are acute and chronic urethritis, stricture, caruncle, inflammatory polyps and cysts in the posterior urethra and in the neck of the bladder, prolapse of the urethra, and diverticulum.

ANATOMIC AND ETIOLOGIC FACTORS

As the urethra in females is close to the organs of the generative tract, it is susceptible to trauma at childbirth and to inflammation from being continually bathed in secretions arising from the vagina and cervix which contain a variety of pathogenic organisms. It is also exposed to contamination from the rectum. Hence the abatement of chronic endocervicitis or vaginitis and proper rectal and vaginal hygiene are important in the elimination of urethral inflammation. Opening on the floor of the urethra just within the meatus are para-urethral or Skene's glands (tubulo-alveolar glands) which play an important part in persistent infection, chiefly gonorrheal, in the urethra. A few observers[5] have noted that in some women there are glands in the posterior urethra closely resembling the prostate. Hypertrophy of these glands or infection in them may lead to urinary obstruction.

DIAGNOSIS AND TREATMENT

The diagnostic procedures—not all of them necessary in all cases, of course—consist of ordinary inspection and palpation of the urethra, determination of the diameter of the lumen (normally about 8 mm. in women), analysis and culture of urine removed by catheter, endoscopic and cystoscopic inspection, measurement of residual urine, histologic study of sections of removed tissue, and roentgenographic delineation of the urethral channel. In addition in many cases a complete urologic examination, including studies of renal function, ureteral catheterization, and x-ray visualization of the upper urinary tract, should be carried out in order to make sure that the disease is confined to the urethra. The more extensive examination is particularly impor-

tant if there is blood or pus in the urine. It should be borne in mind that lesions elsewhere in the urinary tract as well as diseases of the generative organs often coexist with urethral disease. They may cause symptoms similar to those of disease of the urethra, which is one reason for confusion and oversight in diagnosis.

Acute Inflammation of the Urethra

Acute urethritis in women is due in most instances to gonorrheal infection, but nonspecific infection of the urethra is commoner in females than in males. It may be caused by trauma in difficult labor, masturbation or coitus, by prolonged, too vigorous or too frequent instrumentation, by the instillation of strong chemical solutions, by the use of improperly sterilized catheters or instruments, or by the presence of other foreign bodies, such as calculi. Patients frequently note the onset of dysuria soon after catheterization following delivery or major operation, particularly operation on the pelvic organs. Interstitial urethritis may result from infection focused elsewhere in the body (tonsils, sinuses, teeth, cervix). Dietary errors, highly acid urine, and alcoholic excesses may cause much irritation in the urethra. The urethral changes may be secondary to cystitis or pyelonephritis. A constricted urinary meatus, interfering as it does with free drainage, predisposes to infection. In some cases the origin of the urethritis is indeterminate.

The symptoms are diurnal frequency, urgency, nocturia, burning, and pain on urination, dyspareunia and occasionally hematuria. The diagnosis is made on the basis of the history, physical examination, urinalysis, smears or culture of the urethral secretions, and at times examination of the urethra with a cystourethroscope.

Digital examination should be done by placing the index finger in the vagina and palpating the ventral surface of the structure. The urethra should then be gently stripped, particularly in the region of the Skene's glands. By this means, tenderness, thickening or induration of the urethra, suppuration or the presence of a diverticulum may be noted.

A patient with acute inflammation of the urethra must force fluids, eat a bland diet, abstain particularly from alcohol, tea and coffee, and take hot sitz baths daily. The urine should be alkalinized, and if causative organisms such as gonococci, colon bacilli or staphylococci are found, the appropriate sulfonamide or antibiotic should be given. In some cases rest in bed or rest off the feet should be insisted upon. If the meatus is narrow or partially stenosed, meatotomy should be done.

Chronic Inflammation of the Urethra

Chronic urethritis may follow gonorrheal infection, although it is less often a sequel now that there is widespread use of the sulfa drugs and antibiotics in the treatment of gonorrhea. Usually the urethra is tender and thickened, often with a stricture present. The organism may be noted in material stripped from the Skene's glands. The symptoms are urinary frequency and urgency and constant dull pain which is often referred to the suprapubic region, to the vagina or to points higher in the abdomen. The treatment is to force fluids, administer penicillin or one of the newer antibiotics and order hot sitz baths. Persistent foci of infection in the cervix, in Skene's glands or in Bartholin's glands should be cleared up.

Chronic nonspecific or nongonorrheal urethritis, a very common disease in women, occurs most often in patients in middle life and in married women. In many cases the cause is obscure but it is usually the aftermath of acute inflammation of the urethra. Neglect of vulvar hygiene, trauma of childbirth, irritation from sexual intercourse or masturbation, cervicitis, vaginitis, and infection at more remote points (teeth, sinuses, tonsils) are considered as etiological factors. Stricture of the meatus is a predisposing factor. Hunner[7] put great emphasis on focal infection elsewhere as a factor in nonspecific urethritis in women: "One learns by experience to suspect a distant focal infection as the etiological factor in any urinary tract lesion, whose symptoms appear only periodically, the intervals being marked by freedom from symptoms." The author agrees with this opinion and believes that with the use of the sulfa drugs and antibiotics there is a tendency to omit looking for foci of infection elsewhere, particularly in the bowel and the generative organs.

The usual symptoms of chronic urethritis in women are diurnal and nocturnal frequency, severe urgency, burning and pain on urination and often suprapubic and lumbosacral discomfort. Pronounced nervousness is often present. Less common are severe tenesmus, a sensation of incomplete emptying of the bladder, and stress incontinence. While hematuria occurs occasionally, by and large the results of urinalysis are normal. Upon inspection and examination with the finger in the vagina, the urethra may be noted to be slightly thickened or indurated, reddened, and tender. Passage of a catheter or sound may be difficult because of sensitivity or stricture. A pelvic examination, including speculum examination of the cervix, should be carried out. There may be contraction and sclerosis of the urinary meatus and inflammation of the Skene's ducts. The inflammatory changes, however, usually are limited to the deeper portions of the urethra[3] and the bladder neck. When cystocopic examination is carried out, inflammation of the entire urethra may be noted, but it is more pronounced in the posterior portion where the blood vessels are prominent. The mucosa has a red, granular, irregular appearance. Inflammation often extends from the urethra onto the trigone of the bladder, where there may be small openings resembling infected, dilated ducts, small cysts filled with clear fluid, or a number of red polyps with narrow stalks and long flowing fronds. Often present near the sphincter and interfering with its action are tiny inflammatory polyps. If the inflammation in the posterior urethra has been present a long time, there may be cicatricial changes

causing sclerosis of the bladder neck or median bar formation such as that observed in bladder neck obstruction in men. Patients in whom such changes have taken place may have a dilated bladder with trabeculation and residual urine. In some cases the ureters and the renal pelves may be dilated as a result of back-pressure. Renal function studies and intravenous urograms to determine the status of the upper urinary tract should be made in most cases.

Local and constitutional therapy should be carried out. The urethra should be gradually dilated by treatments at weekly intervals until a No. 28 or No. 30 (French) sound will pass easily. The bladder should be irrigated with solutions of 1:10,000 potassium permanganate or 1:10,000 silver nitrate both for antisepsis and to stretch the bladder, for often the capacity has been reduced as a result of frequent urination. A soothing antiseptic solution such as 5 per cent Argyrol® or 1:8,000 acriflavine then may be introduced. If infection remains, the topical applications of 10 per cent to 20 per cent silver nitrate solution through an endoscope will prove helpful. For destruction of inflammatory cysts and polyps, light fulguration of the growths and of the entire posterior urethra with high frequency current has been found quite effective. In a few cases of long-standing inflammation where sclerosis of the bladder neck with median bar formation has occurred, causing less than complete emptying of the bladder at urination, transurethral resection of the obstructing tissue has been done, with good results. Microscopically examined, the tissue removed in such cases resembled that observed in chronic prostatitis.

The constitutional therapy involves putting the patient on a bland diet, forcing fluids, administering sedatives and antispasmodics such as Donnatal,® ordering hot sitz baths, and abating any existing adjacent or distant foci of infection in the cervix, vagina, teeth, tonsils, gallbladder or gastrointestinal tract. In a few cases in which the symptoms were not relieved by the measures described, proscribing certain foods or substances to which the patient was found to be sensitive, and administration of ephedrine or antihistamines, was beneficial. Any concomitant urinary tract infection should be treated with the appropriate sulfa drug or antibiotic agent.

Patients at or past the menopause may have atrophic menopausal urethritis, characterized by thinning and atrophy of the vaginal mucous membrane about the urethra with splotchy areas of reddening or petechiae extending into the vestibule. For such patients the local use of estrogenic hormones[6] with vaginal suppositories of stilbestrol, 0.1 mg. each, inserted nightly for three weeks, followed by a rest period of one week and then readministration if necessary, is often efficacious. Oral administration of small doses of an estrogen is helpful in some cases.

Stricture of the Urethra

Urethral stricture, which is pathologic diminution of the lumen or of the distensibility of the urethra, is a common condition in women of all ages. It may be congenital, and often in young girls is associated with partial stenosis of the meatus,[4] which should be corrected by meatotomy. For children with urethral stricture or obstruction at the neck of the bladder, early diagnosis and proper treatment is important lest irreversible changes occur in the upper urinary tract. In older women the causes are acute or chronic infection of the urethra (chiefly gonorrheal), and trauma in childbirth, in coitus, in rough instrumentation, or in operation. Senile strictures with induration of the entire canal tend to occur in elderly women.

The symptoms of stricture are variable and may be progressive—from frequency, to terminal dribbling, to hesitancy and weakness of the urinary stream with difficulty in emptying the bladder, to complete urinary retention. Often little girls with stricture complain of great frequency during the day, of straining to void, of intermittency of urination, and of enuresis. If infection occurs, as it may if there is chronic stricture, the primary symptoms may be those of pyelonephritis, with backache, pyuria, chills and fever. Many cases of recurrent pyelonephritis in children and also in adults are due to urethral stricture.

The diagnosis is made on the basis of a history of difficulty in urinating and of recurrent urinary tract infection, and results of examination of the urethra with a catheter, a sound and bougie à boule, and a cystoscope. Resistance to passage of a catheter or small sound will be noted and the urethra will seem to grip the instrument. The diameter of the urethra (normally about 8 mm. in adults) can be determined with a sound or bougie à boule. In urethroscopic examination, the urethral tissue will be observed as pale and cicatricial with loss of striae. There may also be congestion, desquamation, erosion or superficial granulation.

Treatment involves periodic dilatation of the urethra until the normal calibre is established, the use of antibiotics for infection, hot sitz baths, and eradication of foci of infection.

Urethral Caruncle

Urethral caruncle, a friable, sensitive vascular tumor situated on the floor of the urethral meatus, is very common in middle-aged and elderly women. It is usually attached by a single base and protrudes through the external orifice as a raspberry-like mass, which may be sessile but usually is freely movable and pedunculated. It is soft and bleeds easily upon manipulation. The patient complains of pain, exaggerated by movement and urination, and of a blood-stained discharge. Bleeding, which is usually spotty but may be heavy, is a prominent symptom. The blood is usually seen at the beginning or end of urination, or following coitus, friction from clothes or pads, or other trauma. Often caruncles are exquisitely sensitive and cause such distressing symptoms as to lead to neurasthenia, insomnia, loss of weight, despondency, melancholia

and other mental disturbances. On the other hand, in many cases there are no symptoms.

While the cause of caruncles is not definitely established, various investigators have inculpated congestion of the urethra, rupture of cysts of Skene's ducts, chronic irritation of the urethral mucosa and estrogen deficiency. Palmer, Emmett and MacDonald,[9] who studied 120 cases of urethral caruncle from the histopathologic and clinical aspects, concluded that caruncle is a partial localized prolapse of the urethral mucosa, associated with chronic inflammation. Begg[1] agreed and said that the chief cause of urethral prolapse is infection, present and past. The histological appearance of a caruncle is essentially that of chronically inflamed, proliferative mucosa; edema and vascular engorgement are prominent features. Caruncles are classified, according to the predominant histologic character, as granulomatous, papillomatous or angiomatous.

No treatment is necessary for small asymptomatic caruncles. For others, the best treatment, in the author's opinion, is that suggested by Walther:[12] After local anesthetization or the administration of Pentothal® intravenously, the urethra is stretched, the tumor is grasped with Allis forceps or traction suture and pulled forward to expose the base. It is cut across at the base with an electric cutting loop, and the base then is thoroughly fulgurated to prevent recurrence. Care must be taken not to fulgurate too much of the surrounding mucosa of the urethra lest stricture be caused. Topical application of silver nitrate solution is ineffective in the treatment of caruncle.

Many irritative urinary symptoms usually attributed to urethral caruncle, when such a lesion is present, are more often due to associated stricture of the urethra or chronic posterior urethritis. The author carries out a thorough examination of the urethra in all such cases in order to detect and correct pathological changes.

After a caruncle is removed, the patient should be examined frequently so that the urethra may be properly dilated and recurrence of the tumor, which is common, prevented. A microscopic study should be made of all caruncles to differentiate caruncle from malignant tumors of the female urethra such as carcinoma and sarcoma, which are fortunately infrequent.

Prolapse of the Urethra

Prolapse of the urethral mucosa may occur in infants and young girls but is most common in women past middle age. It may be partial but usually the entire circumference of the mucosa is involved. The chief predisposing cause is generally considered to be a weakness of the urethral wall, which may be congenital, the result of trauma such as is sustained during delivery, or the result of general weakness and debility. As precipitating causes, such factors as chronic cough, straining at stool, vesical tenesmus, calculi in the bladder, persistent diarrhea, and parturition must be considered. In the cases of two 9-year-old girls reported by Zeigerman and Kimbrough,[13] direct trauma—fall from a bicycle and a kick in the vulva—was the precipitating cause.

The lesion is a red, congested mass that protrudes several centimeters from the meatus and exudes a serosanguineous fluid. Occasionally infarction or strangulation occurs and the mass becomes ulcerated and necrotic. Symptoms may be slight but there is usually frequency, pain and burning on urination, difficulty in voiding, and bleeding, particularly if the mass is manipulated.

The method of treatment depends somewhat upon the cause and the extent of the prolapse. If the cause is an acute inflammatory process, reduction of the mass, the application of astringent compresses and removal of the cause of inflammation may be all that is required. In some cases a catheter may be inserted and left in place until the edema subsides.

In the author's experience, the most satisfactory treatment is to circumcise the redundant mucosa with high frequency current and fasten the cut edges to the vestibular margin of the vagina. Stellate fulguration with high frequency current or slow electrocoagulation with a flat electrode is also considered effective treatment.

Diverticulum of the Urethra

Diverticulum[8] of the urethra usually is manifest as a painful, fluctuating mass in the middle third of the urethrovaginal septum which communicates with the urethral canal. It usually causes frequency of urination, and discomfort during coitus or when the patient is sitting or walking. At the end of urination there is often a discharge of pus or cloudy urine. Formation of stones in the sac is rather common. In inspection and palpation of the ventral surface of the urethra, a pouch can be seen and felt. The contents, which can be expressed by palpation, are often purulent. The site of the orifice into the urethra can be ascertained by urethroscopic examination. For purposes of roentgenographic study, a radiopaque material can be introduced through a ureteral catheter coiled in the sac.

Diverticulum of the urethra is believed to be caused by developmental defect, by herniation of the urethral canal at a point weakened by trauma, or by rupture into the urethral canal of a retention cyst or an abscess of the urethral wall.

The most effective treatment is complete surgical removal of the pouch with closure of the defect in the urethra and urethral catheter drainage of the bladder for a week or ten days.

Congenital Valves

Congenital valves or bands of tissue in the posterior urethra are not as common in girls as in boys but must be considered in all cases of urinary difficulty in the young, particularly when there is evidence of renal insufficiency.

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